Attachment V
Draft Data
Management Plan

Attachment V

Draft Data Management Plan for the Organic Contamination in the Vadose Zone Operable Unit (OU 7-08) Remedial Investigation/Feasibility Study Work Plan

CONTENTS

FIGURE

TABLE

ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirements
ARDC	Administrative Record and Document Control
ATSDR	Agency for Toxic Substance and Disease Registry
CCS	Contract Compliance Screening
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	Contract Lab Program
CRP	Community Relations Plan
DBA	Data Base Administrator
DMP	Data Management Plan
DOE	Department of Energy
EIRC	ERD Independent Review Committee
EPA	Environmental Protection Agency
ERIS	Environmental Restoration Information System
ERD	Environmental Restoration Department
FDC	Field Data Coordinator
FS	Feasibility Study
FSP	Field Sampling Plan
HSP	Health and Safety Plan
IEDMS	Integrated and Environment Data Management System
INEL	Idaho National Engineering Laboratory
L&V	Limitations and Validation
OCVZ	organic contamination in the vadose zone
PA	Preliminary Assessment
PHEA	Public Health and Environmental Assessments
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RI	Remedial Investigation
RI/FS	remedial investigation/feasibility study
ROD	Record of Decision

SAP	Sampling and Analysis Plan
SI	Site Investigation
SMO	Sample Management Office
SOP	Standard operating procedure
SOW	Statement of Work

Attachment V

Draft Data Management Plan for the Organic Contamination in the Vadose Zone Operable Unit (OU 7-08) Remedial Investigation/Feasibility Study Work Plan

1. INTRODUCTION

This data management plan (DMP) has been developed to ensure effective management of the significant amounts of information associated with the Organic Contamination in the Vadose Zone (OCVZ) Operable Unit Focused RI/FS at the Radioactive Waste Management Complex of the Idaho National Engineering Laboratory (INEL).

The plan provides or references procedures and requirements necessary to develop a data base of relevant information that can be readily accessible and accurately maintained. The plan describes the data flow process, data custodianship, and organizational and individual responsibilities associated with data management. It also provides project file and reporting requirements and identifies extensive data base capability requirements to allow selective data sorting, analysis, formatting, and reporting.

The data base configuration currently being developed will store past and future data associated with the geological, environmental, chemical, and radiological information for the Buried Waste Program of the Environmental Restoration Department (ERD), which is the organization responsible for the OCVZ Operable Unit Focused RI/FS. The data base will also store data required to support the above information.

Section 2 discusses the data flow process and the associated individual responsibilities. Data quality and control objectives as they pertain to the data base and data management are also outlined. A data flow diagram that presents the major steps involved in the data flow process from the initial evaluation of data information and quality requirements through procedure specifications, data collection, validation, data base entry and control, and reporting is shown in Figures V-1 and V-2 taken from PD ERD Program Directive 2.4 "Characterization Process In the Environmental Restoration Program", 7-12-91, ERD Program Directives Manual.

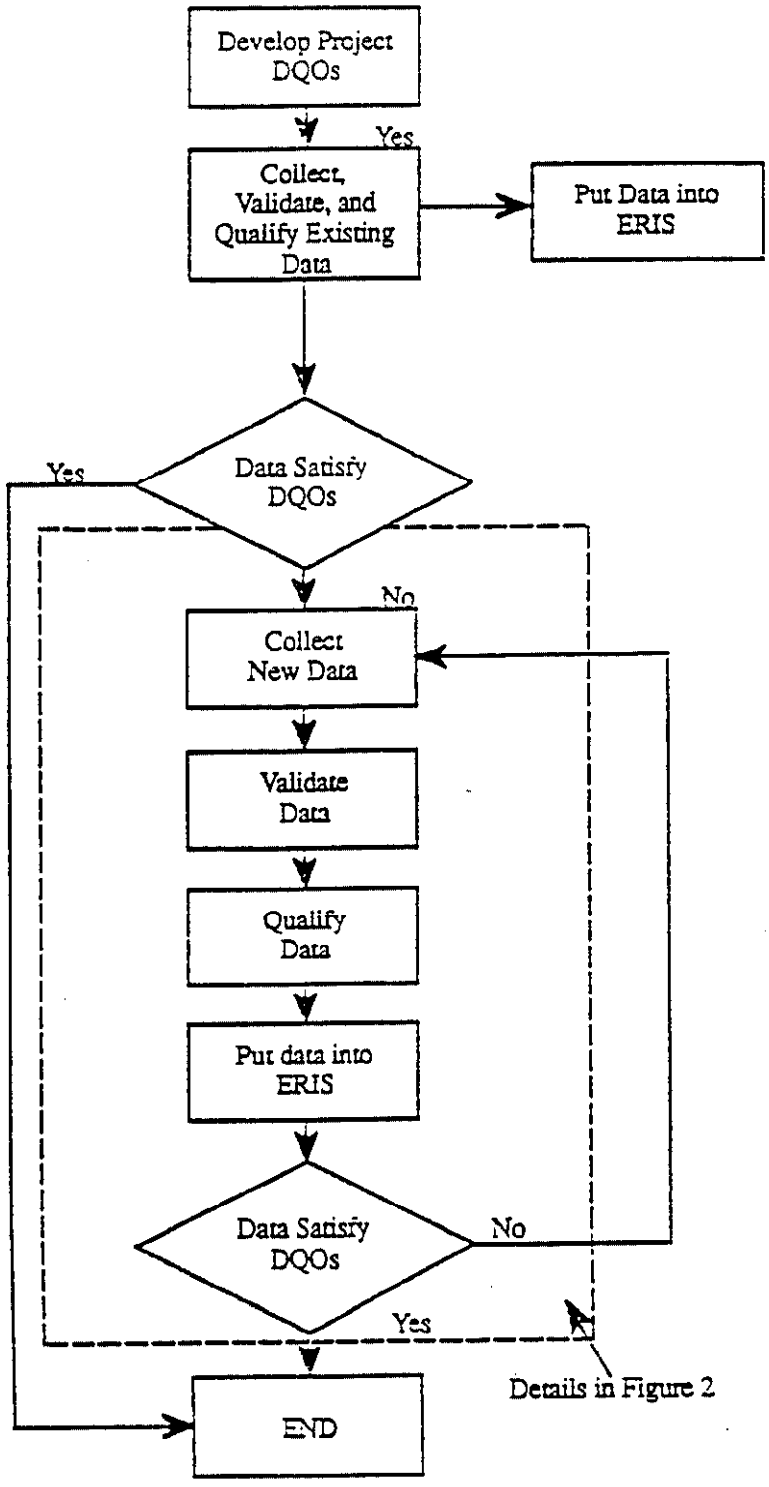

Figure V-1. Overall flow of characterization in ERP.

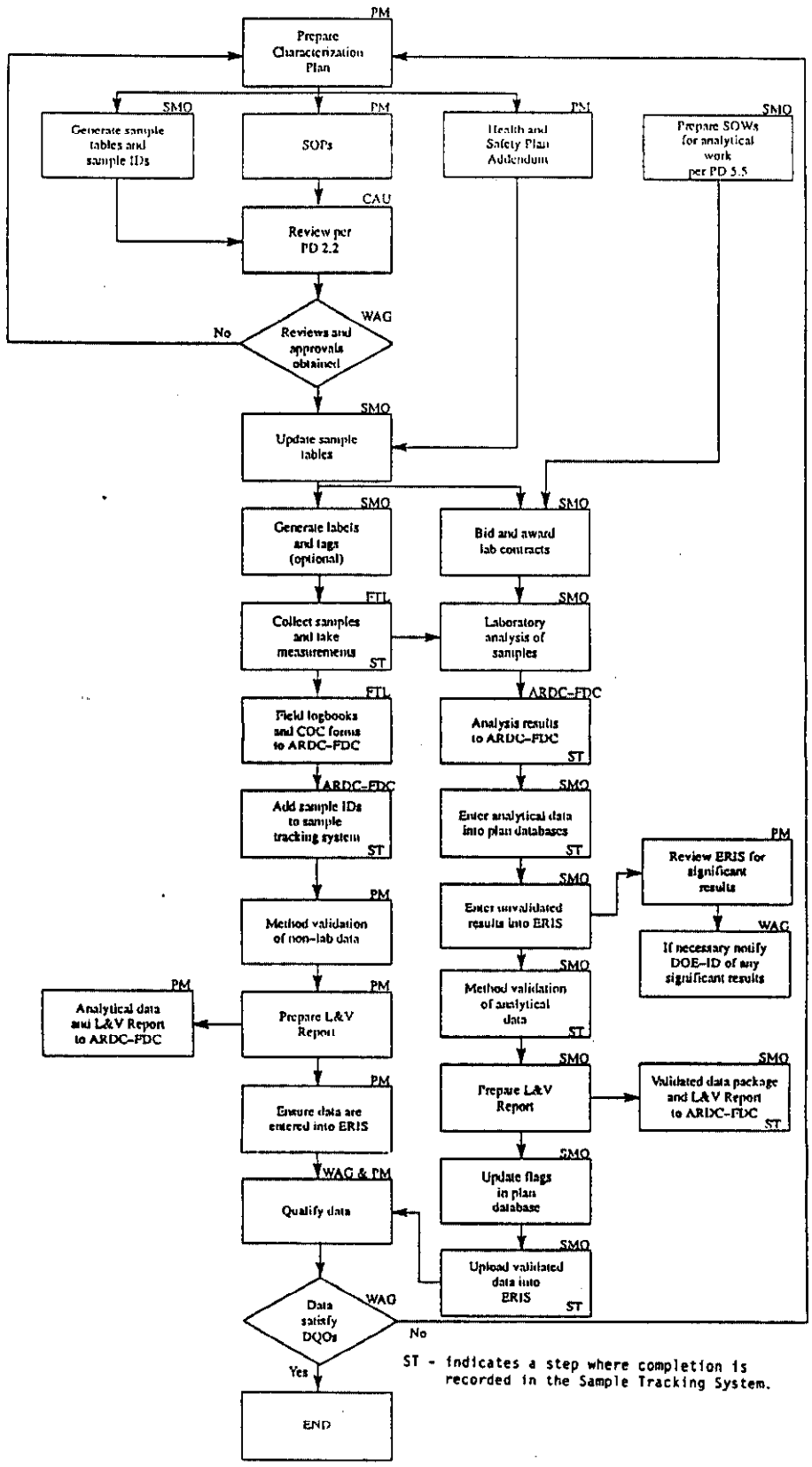

Figure V-2. Process flow diagram for characterization activities by ERP.

Section 3 identifies requirements for project files and describes the two major file systems--administrative and technical.

Section 4 describes data reduction, validation, and reporting requirements.

Section 5 describes computer data base design and capabilities. Management of technical data will be accomplished primarily with computer data base systems. The data will be controlled by taking advantage of existing data bases and data processing systems at the INEL.

Section 6 shows data presentation and reporting requirements. The section includes a description of reports, information display techniques, and data and quality assurance presentation formats and requirements.

Section 7 describes data management requirements for analytical techniques.

Section 8 presents the implementation schedule for the activities associated with this DMP.

2. DATA FLOW PROCESS AND CUSTODIANSHIP

The flow of information within ERD shall be controlled by ERD Program Directive 2.4, "Characterization Process In the Environmental Restoration Directives", 7-12-91, ERD Program Directives Manual:

- Identification of data requirements
- Identification of data objectives
- Data verification
- Data validation
- Data storage
- Data reporting.

2.1 Functional Structure and Individual Responsibilities

Responsibilities of individuals assigned to manage each of the functional areas in the data flow process are explained in the following paragraphs.

ERD Administrative Record and Document Control Technical Leader

The responsibilities of the ERD Administrative Record and Document Control Technical Leader are to (a) maintain all project administration files, including hard copy, microfiche, and auxiliary electronic information files (all files categorized into administrative and technical areas), (b) receive all original and raw data from field studies, sampling and analysis activities, and testing and analytical results, (c) construct and maintain a filing index for all information, data, and documents included in the ERD project files, (d) be responsible for the location, control, and security of all file information and (e) perform quality checks per the ERD Quality Program Plan to ensure the information is correct, complete, and up to date. All releases of data from these files will be controlled and documented. The Administrative Record and Document Control Technical Leader will also ensure that modifications to the administrative record system are approved by the ERD Data Management Manager and are clearly documented.

IEDMS Data Base Administrator

The Integrated and Environment Data Management System (IEDMS) Data Base Administrator (DBA) will provide data base control administration for both the IEDMS and interim data bases used for IEDMS activities. The IEDMS DBA's responsibilities include control data change requests and security for the data base. The IEDMS DBA will also be responsible for IEDMS data base quality checks, audits, maintenance, operations, and transfer of data designated for uploading into the Environmental Restoration Information System (ERIS) data base.

ERIS Data Base Administrator

The ERIS Data Base Administrator (DBA) will provide data base control administration for both the ERIS and interim data bases used for ERIS activities. The ERIS DBA's responsibilities include control, data change requests, and security for the ERIS data base. The DBA will also be responsible for ERIS data base quality checks, audits, maintenance, and operations.

ERD Sample Management Office

The ERD Sample Management Office (SMO) will establish a group of professionals to perform data quality reviews of data placed in the qualified data base when requested by the OCVZ Focused (RI/FS) project management. One of the responsibilities of the SMO is to help ensure that the quality of the data will meet the ERD objectives specified in the planning documents.

Project Data Quality Control Manager

Responsibilities of the Project Data Quality Control Manager are to ensure that all field sampling and data measurements are coordinated and conducted in accordance with the ERD Quality Program Plan and specific sampling and analysis plans, that key individuals are assigned within each area of sampling and data collection to oversee and monitor the process and results of data collection, that all necessary sampling and data collection documents are prepared and maintained, and that all procedures for quality, control, and processing are followed. The Project Data Quality Control Manager will periodically audit performance of all field and laboratory activities and systems used in project activities for conformance to the ERD Quality Program and specific Quality Assurance Project Plans.

ERD Sample Management Office

The ERD Sample Management Office (SMO) will be responsible for establishing subcontracts for sample analyses with laboratories. The SMO will ensure that data are produced in accordance with procedural and contractual requirements and will monitor the lab's performance to ensure complete, accurate, and timely performance and results. The SMO will receive data from the Administrative Record and Document Control (ARDC) Field Data Coordinator (FDC) and ensure that it is validated utilizing SMO standard operating procedures (SOPs).

Project Data Presentation and Analyses Coordinator

Responsibilities of the Project Data Presentation and Analyses Coordinator are to identify and summarize all data presentation forms and formats used for official communication of raw data and summary results to agencies outside EG&G Idaho, to coordinate reporting formats so data are reported consistently, to present all results based on analytical manipulations of the raw data, and to review all presentations and reports before their release.

Project Modeling Results Coordinator

The Project Modeling Results Coordinator will ensure that adequate and appropriate documentation accompanies all modeling results data to be entered into a data base and will coordinate all modeling results. This effort includes documentation of computer model revisions. The Modeling Results Coordinator will also ensure that all the necessary data is captured for modeling purposes, both in the field and laboratory.

2.2 Quality Assurance/Control Objectives

The data quality assurance and control objectives of this plan are primarily concerned with maintaining complete, accurate, and well documented information. Hard copy, electronic, microfiche, and optical disk copy document files will be maintained so ERD documentation is current and complete and all modifications and revisions have been recorded. A key information user's list will be maintained, and copies of all revisions will be distributed to information users.

Similar controls will be performed for the electronic data files (data base files). Quality assurance and quality control (QA/QC) requirements during measurement, sampling, control, and analyses are identified in the ERD Quality Program Plan (QPP 149), and the applicable Quality

Assurance Project Plan (QAPP). Quality Assurance/Quality Control (QA/QC) functions of data validation will be documented as required in the SMO SOPs. The ERD SMO will receive the data from the ARDC, document any method nonconformance utilizing the SMO SOPs, and assign data qualifier flags to indicate limitations on the usability of the data. Once the data have been entered into the data base, data base management, maintenance, and operation procedures will specify the audit and check functions to be performed to ensure that the data have been correctly and completely entered, that data loss or destruction does not occur, that changes do not occur outside established change control, and that data security is controlled.

EIRC Chairman

The ERD Independent Review Committee (EIRC) Chairman provides leadership for a review committee responsible for providing documented, consistent, independent technical, and peer document review. The reviews ensure applicable safety and quality standards are complied with.

3. PROJECT FILES

Project files will consist of hard copy, microfiche, or optical disk copies of field logs, correspondence, reports, documents, measurements, and sample analysis data. In addition to these files, an electronic data base will be used to store, access, manipulate, format, and present data, documentation, reports, and analytical results. The electronic records will be cross-referenced to microfiche/optical disk records as deemed necessary. The ERD ARDC Technical Leader will oversee and coordinate the project files activity.

ERD project hard copy files will be divided into two major categories--administrative and technical. A file identification and numbering index will be established and updated as needed to provide ready access to filed information. The ERD ARDC Technical Leader will assign file identification numbers and maintain adequate storage facilities with security and control sufficient to protect against document loss or unauthorized access. A project file will be maintained as a measure of document control to ensure that all project documents are readily accessible and accounted for upon project completion.

Management of electronically stored data is discussed in detail in Section 4.

Two separate distinct administrative records will be maintained for the OCVZ Operable Unit. A comprehensive administrative record, which includes all documents, correspondence, data, and other pertinent information generated, will be maintained by ARDC. Another administrative record, referred to as the RI/FS administrative record, will also be maintained by ARDC. The RI/FS record is required pursuant to Section 113 of CERCLA to facilitate public participation in the RI/FS process (EPA 1988).

The information included in the RI/FS administrative record will be a subset of the information contained in the comprehensive administrative record. While the purpose of the comprehensive record is to document all administrative and technical information generated at OCVZ, the purpose of the RI/FS record is to document only that information considered or relied upon in selecting a remedy for the site. Therefore, certain administrative documents such as state quarterly reports, site-specific contracts, procurement packages, audit reports, etc., will not be included in the RI/FS record. Table 3-1 identifies the information that will be included in the RI/FS record, as

appropriate. As information pertaining to RI/FS activities at OCVZ is generated or received, it will be reviewed by the Waste Area Group-7 (WAG-7) Manager or the Operable Unit RI/FS Project Manager to determine its eligibility as RI/FS administrative record material. The WAG-7 Manager or Project Manager will notify the ARDC Manager of any material that has been designated for the RI/FS record. The ARDC Manager will be responsible for maintaining and updating both the comprehensive and RI/FS administrative records for WAG-7.

Table V-1. RI/FS administrative record index - outline

1. SITE IDENTIFICATION

- 1.01 Notification/Site Inspection Reports
- 1.02 Preliminary Assessment (PA) Reports
- 1.03 Site Investigation (SI) Reports
- 1.04 Incident Report
- 1.05 Hazard Ranking System
- 1.06 Background Information

2. ENFORCEMENT

- 2.01 Enforcement History
- 2.02 Notice Letters
- 2.03 Administrative Orders
- 2.04 Consent Decrees
- 2.05 Affidavits

3. REMOVAL AUTHORIZATION

- 3.01 Sampling and Analysis Plans (SAPs)
- 3.02 Sampling and Analysis Data/Chain of Custody Forms
- 3.03 Action Memorandum
- 3.04 Amendments to Action Memorandum
- 3.05 Status Reports

4. RI/FS PLANNING

- 4.01 Statement of Work
- 4.02 RI/FS Work Plan
- 4.03 Quality Assurance Project Plan (QAPjPs)
- 4.04 Field Sampling Plan (FSP)
- 4.05 Health and Safety Plan (HSP)
- 4.06 Sampling and Analysis Data/Chain of Custody Forms
- 4.07 Memorandum/Reports
- 4.08 Resolutions to Department of Energy (DOE) Review Comments
- 4.09 Resolutions to Environmental Protection Agency (EPA) and Idaho Department of Health and Welfare (IDHW) Review Comments

Table 3-1. (continued)

4.10	Meeting Notes
4.11	National Environmental Policy Act (NEPA) Documentation
4.12	Comments and Responses from Public Scoping Meetings
5.	APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)
5.01	ARARs Analyses
5.02	Correspondence
6.	REMEDIAL INVESTIGATION (RI) REPORTS
6.01	RI and Baseline Risk Assessment Report
6.02	Resolutions to DOE Review Comments
6.03	Resolutions to EPA and IDHW Review Comments
6.04	Technical Memorandums
6.05	Meeting Notes
7.	TREATABILITY STUDIES (TS)
7.01	TS Statement of Work
7.02	TS Work Plan
7.03	TS SAP
7.04	TS HSP
7.05	Sampling and Analysis Data/Chain of Custody Forms
7.06	Memorandum/Reports
7.07	Resolutions to DOE Review Comments
7.08	Resolutions to EPA and IDHW Review Comments
7.09	ARAR Documentation
7.10	Meeting Notes
7.11	TS Final Report
7.12	Design Documentation
7.13	Readiness Review Documentation
7.14	NEPA Documentation
7.15	Permitting

Table 3-1. (continued)

8. REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS) REPORTS

- 8.01 RI/FS Report
- 8.02 Memorandum/Reports
- 8.03 Resolutions to DOE Review Comments
- 8.04 Resolutions to EPA and IDHW Review Comments
- 8.05 Meeting Notes

9. PROPOSED PLAN

- 9.01 Proposed Plan
- 9.02 Comments and Responses from Public Comment Period
- 9.03 Meeting Notes
- 9.04 Memorandums and Reports

10. RECORD OF DECISION (ROD)

- 10.01 Responsiveness Summary
- 10.02 Late Comments
- 10.03 Amendments to the ROD
- 10.04 Explanation of Significant Differences
- 10.05 Meeting Notes

11. PUBLIC HEALTH AND ENVIRONMENTAL ASSESSMENTS (PHEA)

- 11.01 Agency for Toxic Substance and Disease Registry (ATSDR) Health Assessments
- 11.02 DOE PHEAs
- 11.03 Toxicological Profiles

12. NATURAL RESOURCE TRUSTEES

- 12.01 Notices Issued
- 12.02 Findings of Fact
- 12.03 Reports

Table 3-1. (continued)

13. CORRESPONDENCE

- 13.01 DOE
- 13.02 EPA
- 13.03 IDHW
- 13.04 Interagency
- 13.05 Interest Groups/Advisory Committees
- 13.06 General

14. PUBLIC PARTICIPATION

- 14.01 Community Relations Plan (CRP)
- 14.02 Public Notice(s) (Availability of the Administrative Record File and Proposed Plan, Public Meetings)
- 14.03 Public Meeting Transcripts
- 14.04 Documentation of Other Public Meetings

15. TECHNICAL SOURCES AND GUIDANCE DOCUMENTS

- 15.01 DOE Guidance
- 15.02 EPA Guidance
- 15.03 IDHW Guidance
- 15.04 Technical Sources

16. GENERAL REFERENCE MATERIALS

17. ADMINISTRATIVE RECORDS

- 17.01 Administrative Record Comments

4. DATA REDUCTION, VALIDATION, VERIFICATION AND REPORTING

4.1 Data Reduction and Reporting

Data reduction refers to computations and calculations performed on the analytical data. This includes computing summary statistics, standard errors, confidence limits, tests of hypothesis relative to the parameters, and model validation. Standard equations and statistically acceptable procedures will be used. When appropriate, data will be reported with statistically supported limits of uncertainty to indicate limitations on the use of the data. All data, when reported, will be rounded to the number of significant figures consistent with the confidence limits. Confidence limits will be justified by the accuracy and precision of the sampling measurement and the analytical method.

Laboratory data reduction will be addressed in the project-specific analytical statements of work issued to the analytical laboratory(s). All bench chemists will document sample preparation activities in a bound laboratory notebook or on bench sheets, which will serve as one of the primary records for subsequent data reduction. Final data reduction of analyses performed will be the responsibility of the individual compiling the final report. Results from each data collection activity will be reported in consistent units throughout each task. Any applicable state or federal regulatory limits will be presented with the analytical data.

Field data reporting procedures and formats are specified in the Field Sampling Plan portion of the Sampling and Analysis Plan (SAP). Laboratory data reporting will follow the procedures and format specified in the project-specific analytical statement of work. Results and quality control (QC) data for each analysis will be transcribed onto analytical reporting forms specific to the particular analysis. For most of these analyses, these forms will be provided in the analytical statement of work. All data will be checked for accuracy and precision at the bench and instrument operator/analyst level and the laboratory manager's level before submitting the data package to EG&G Idaho. EG&G Idaho will validate data in accordance with the prcedures in the SAP (Attachment III).

4.2 Data Flow Process

The Organic Contamination in the Vadose Zone analytical statement of works will specify information and guidance specific to the samples to be analyzed and data reporting forms to be used. Separate statement of works for chemical, radiological, and geological property analyses are prepared and have separate reporting requirements.

The data flow process follows PD 2.4 (as referenced previously). The process begins when an SAP data base is developed for a project. After completion of the SAP database, the sample tracking system is "populated" with sample numbers of the samples planned for collection. Sample labels and tags (when requested) are printed by data management personnel using this data base. After sampling, selected field data will be captured by data management for producing summary tables of field and analytical data.

Laboratory data packages will be received from the analytical laboratory in triplicate. When the ARDC-FDC receives a data package from the laboratory, the sample tracking system is updated. The sample tracking system tracks samples by EG&G Idaho sample number and analysis type. If the data package requires Level A or B validation, as specified in SMO-SOP-12.1.1, one copy of the data package is transmitted to the SMO. A second copy of the package is transmitted to the IEDMS Data Base Administrator, and the third copy of the package is kept on file at the ARDC. The SMO performs method validation of the data to either Level A or B concurrently with data entry in the IEDMS. The level of method validation required is specified in the Quality Assurance Project Plan (QAPjP). If only a percentage of the data is to be validated to either Level A or B, this is also specified in the QAPjP. For all data that are not validated to either Level A or B, the ARDC-FDC forwards the data package only to the IEDMS Data Base Administrator for Level C processing.

When IEDMS data management personnel receive a data package, the first step is to prepare the package for data entry via computer programs, followed by data entry with automated error checks of the data. The data management staff decides if the package has sufficient completeness and accuracy for entry into the data management system (IEDMS) and reports to the Project Manager. The process often results in a need to receive clarification from the laboratory that performed the analyses prior to entering the data. For example, a data package cannot be entered with the proper linkage maintained for records if sample numbers are used inconsistently throughout the data package. Once the package is deemed adequate, it is then entered into the IEDMS.

Concurrent with data entry, an automated routine is invoked that performs a set of checks on the data as part of the data verification process. A listing of suspect data entries (errors) is printed to an output file. Then an attempt is made to resolve each error. First, a check is made to determine if the error resulted from data entry. Other attempts are made to resolve the errors and when the effort is successful, the data forms and data bases are modified to reflect any changes. A listing of the residual set of errors is made, and each error is highlighted on the applicable data form. The data entry clerk visually verifies the data through comparison of data on the original data forms and data on electronically produced forms, the latter originating from the data base created in the data entry process. For data packages generated using Environmental Protection Agency Contract Lab Program (CLP) protocols, the data are evaluated for adherence to the specific CLP statement of work using a set of Contract Compliance Screening (CCS) procedures. The CCS procedures evaluate the data for completeness and technical compliance to the CLP statement of work. When desired, for inclusion in reports, the IEDMS can generate QC tables, which provide an efficient, easily readable tabular presentation of all data included on the complete set of data forms.

The SMO ensures that the method validation is performed using the SMO SOPs. The method validation chemists attempt to resolve deficiencies identified during the method validation process. The chemist reviews the raw data to assess whether the analysis was performed per the specifications in the analytical method and that data on the reporting forms are consistent with the raw data. All laboratory data will be cross-referenced to the appropriate trip blank, field blank, reinstate (equipment blank), method blank, field duplicate or replicate, matrix spike, and matrix spike duplicate. In addition, all pertinent data (date of sample collection, date received by the laboratory, and date analyzed or prepared for analysis) for each sample will be referenced against their respective holding times.

After a chemist's evaluation, a Data Limitations and Validation (L&V) report is produced. The data forms with data validation flags are then resubmitted to the IEDMS staff. The L&V report is written after a thorough examination of the data. The L&V report will state if the data are consistent with the analytical level requested in the statement of work, explain any limitations on use of the data, and define any flags used in the method validation/qualification process. The L&V report together with the QC tables (when requested) will allow the customer effective use of data. At completion of the method validation process, validated data are uploaded into the ERIS. The ERIS is discussed in Section 5.

4.3 Data Validation and Verification

All analytical data will be validated as described in the QAPjP. At completion of the RI, field and analytical data will be validated to ensure that the PARCC parameters were met. These validations will be performed in accordance with the procedures specified in the SAP (Attachment III).

5. COMPUTER DATA BASE

The IEDMS is a PC-based system that can support environmental investigations from their design stage and throughout the duration of the study. The system integrates data originating from the Sampling and Analysis Plan, field data, and analytical findings. The IEDMS automated features include:

- Sampling guidance forms
- Barcoded sample labels and tags
- Field and analytical forms reproduction
- Sample tracking
- Analytical data qualification
- Completeness reports
- Results and QC data reporting.

The IEDMS has extensive automated capabilities that support a systematic and comprehensive process for performing quality assessment of analytical data. One product of this process is a unique and extremely useful tabular presentation of the data. This table contains the complete set of results and QC data included on the data reporting forms while presenting the information consistent with the chronology in which the analysis was performed. The ERIS computer data base system has been developed to provide storage, control, management and analysis of samples, measurements, and analytical results pertaining primarily to the site, contaminants, and the environment. The data base is fully relational, providing electronic control of and access to all site-qualified data in several data subject areas. They are radiological, environmental, geological, and chemical. The system also provides useful management and analytical software processing tools to allow data summarization and analytical evaluations with tabular and graphical displays. Development of the data base system to full performance capabilities will be accomplished over an extended time-frame. However, interim management, control, analysis, etc., of the data can be accomplished without compromise to data quality, control, and security. Existing electronic and hard copy data base systems will be used. Data base description, quality, control, and management are described in the following documents:

- White, L.J., "General Requirements for the Environmental Restoration Information System," EGG-WM-8615, 1989.
- White, L.J., "System Quality Assurance Plan for ERIS," EGG-WM-9760, 1991.
- White, L.J., "Systems Configuration Management Plan," EGG-WM-9759, 1991.

6. DATA PRESENTATION

6.1 Tabular and Graphical Displays

Data has been generated from previous investigations at the Organic Contamination in the Vadose Zone Operable Unit. Large quantities of additional data (including elements pertinent to assessing the magnitude and extent of contamination and the risks posed by the contamination) will be collected in the course of the Organic Contamination in the Vadose Zone RI/FS that requires reporting, sorting, manipulation, and analysis.

To complete the requisite analyses and data manipulation and to report the information and conclusions in a clear and logical format, a number of tabular and graphical displays will be used. This manipulation of the data is necessary to assess information trends, identify adequacy of the data, identify missing information that needs to be collected, select sampling locations, and visually represent site conditions or data.

Data representations in tabular format are expected to be, at a minimum:

- Unsorted (raw) data (when applicable)
- Results for each medium or for each constituent monitored
- Data sorted by potential stratification factors (e.g., location, soil layer, topography)
- Summary data.

Site information anticipated to be listed in tables includes:

- Water table elevations
- Site flora and fauna
- Pump test data.

Analytical data anticipated to be sorted and displayed in tables includes:

- Lists of organic constituents of concern and pertinent regulatory concentration limitations
- Sorted sampling data results by compound within each medium and with depth in each medium
- Comparisons of background concentrations, sampling data, and regulatory limitations
- Statistical manipulations of sampling results
- Input data for predictive transport model
- Output results for predictive transport model
- Comparison of predicted results with measured concentrations
- Analytical QC data.

Data representations in graphical formats are anticipated to be, at a minimum:

- Sampling locations
- Boundaries of sampling areas and areas where more data are required
- Levels of contamination at each sampling location and the geographic extent of contamination
- Changes in concentrations in relation to distance from constituent source, time, depth, or other parameters to indicate extent and attenuation
- Potential receptors.

Site features anticipated to be displayed graphically are the following:

- Site layout
- Sampling locations (diagrams of well and bore hole locations, maps of other sampling locations)

- Stratigraphy (profiles and fence diagrams)
- Isopach maps of interbeds and surface soil
- Water level elevations
- Groundwater flow nets
- Population plot
- Well locations on the INEL Site
- Features affecting intramedia and intermedia transport.

Graphic displays of the extent of contamination are expected to include:

- Geographical (area) extent of contamination
- Isopleth maps of individual contaminants in each medium (soil, vadose zone, aquifer)
- Vertical distribution of each contaminant
- Predicted concentrations of contaminants (changes overtime at given locations)
- Predicted spread of contaminants over time.

Two-dimensional or three-dimensional diagrams of specific features will be used in graphical displays. The exact selection will be determined at the time of data compilation and assessment.

6.2 Project Reporting Requirements

Reports and documentation are required to keep project personnel and regulatory agencies informed of project status and results. These reports will be filed by ARDC and will be available as file copies and also in the data base. Report generation shall be as required to support a given project. Results of all investigations necessary to (a) characterize the Organic Contamination in the Vadose Zone Operable Unit, (b) define the nature and extent of contamination, and (c) identify actual or potential risks to human health and the environment will be documented in reports.

6.3 Synthesized Data Presentation

Synthesized data will be carefully delineated from sample data. To accomplish this, all synthesized data will be marked accordingly, and the equations or algorithms used will be documented or referenced.

6.4 Quality Assurance of Data Presentation

Analytical data presented will contain both the data quality level and the data limitations as identified during validation.

7. DATA ANALYSIS TECHNIQUES

All data analysis techniques will be documented in detail with appropriate references in the Sampling and Analysis Plan (Attachment III of the OCVZ Focused RI/FS Work Plan).

8. REFERENCES

EG&G Idaho, *Informal Report BWP Data Qualification Manual*, Prepared under DOE Contract No. DE AC07-761D01570

EPA, *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA*, Interim Final, EPA, Washington, D.C., Office of Emergency and Remedial Response, EPA/5406-89/004, OSWER Directive 9355.3-0.1, October 1988.

EPA, *National Oil and Hazardous Substances Pollution Contingency Plan*, Federal Register, Volume 55, No. 46, pp. 8813-8865, 1990.

EG&G Idaho, ERD *Program Control Manual*

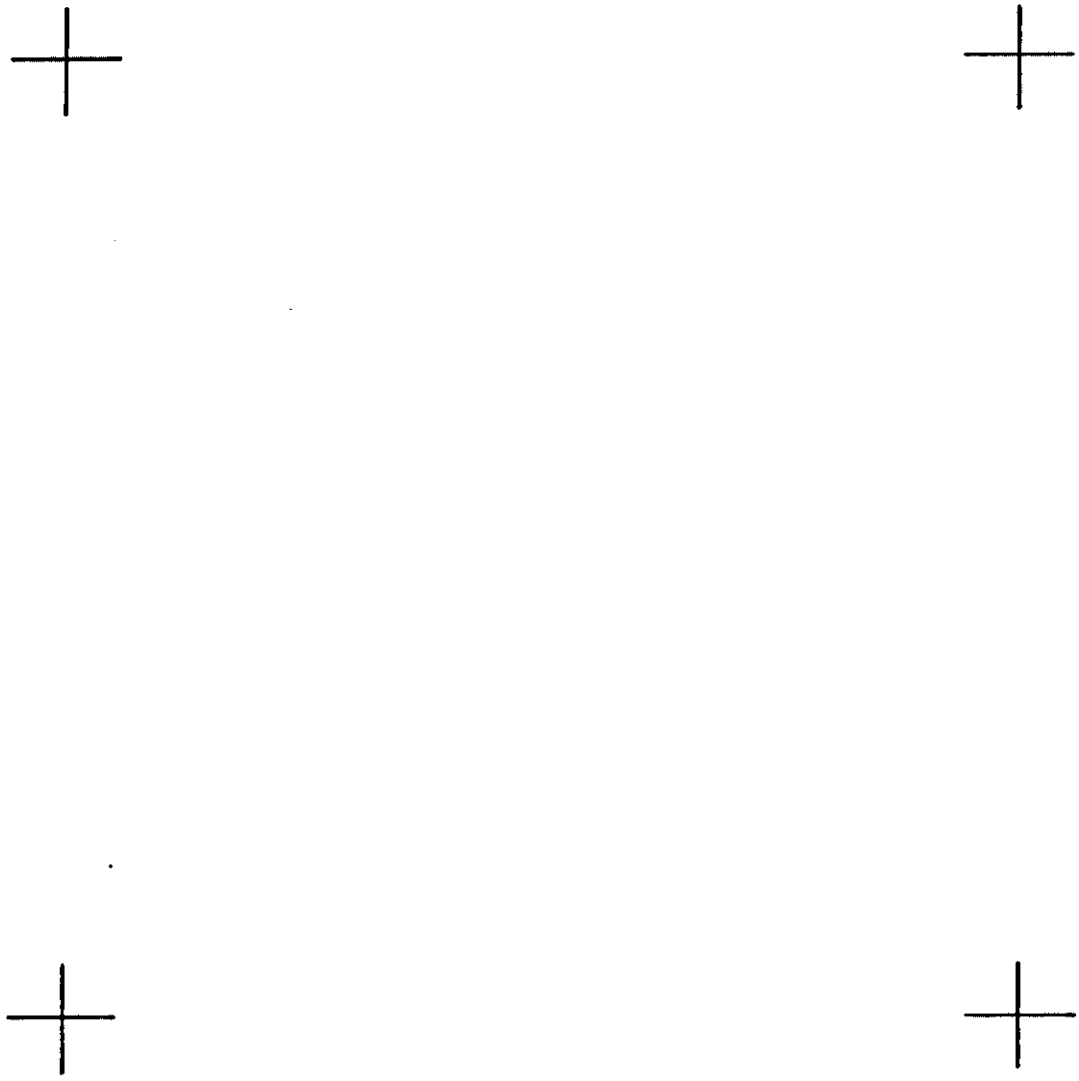

Figure 2-6. Contour map of the SDA.

5,000

5,500